

Request for Regulation and Letter of Authorization for the Incidental Taking of Marine Mammals Resulting from Pile Driving Activities at Naval Submarine Base Kings Bay, Georgia Supplemental Pile Information

Table 1. Project 1A (FY17) Tug Pier Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
18	concrete	square	148	0	impact	n/a	159 ^{1,2}	16	60	960	20	320
24	concrete	square	18	0	impact	n/a	165 ^{3,4,¥}	16	70	1120	25	400
16	timber	round	0	159	n/a	vibratory	n/a	16	n/a	n/a	5	80

Up to 65 days of in-water work; *Values are weighted project averages as analyzed in US Navy 2014; original data from CALTRANS 2012; 1 – US Navy 2014; 2- CALTRANS 2012; 3 – US Navy 2013; 4- US Navy 2015; ¥ – values measured at > 10m from incident pile were normalized to 10m before calculating averages.

Table 2. Project 1B (FY17) General Access Pier Crab Island Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
16	composite	round	2	0	vibratory	n/a	n/a	2	n/a	n/a	20	40
16	timber	round	0	2	n/a	vibratory	n/a	2	n/a	n/a	5	10

Up to 2 days of in-water work

Table 3. Project 2 (FY17) UMC Layberth P661 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
14	steel	H	55	0	impact	n/a	168	8	80	640	35	280

Caltrans 2012; Up to 7 days of in-water work

Table 4. Project 3A (FY17/FY22) EHW-2 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	steel	round	2	2	impact	vibratory	179**	2	70	140	25	50
24	concrete	square	3	3	impact	vibratory	165 ^{\$}	8	75	600	30	90
24	steel	round	10	10	impact	vibratory	179**	8	70	560	25	200

^{\$} U.S. Navy 2013, 2015; **CALTRANS (2012); 2WSDOT(2005a); 3WSDOT(2005b); up to 2 days of in-water work for FY17; up to 9 days of in-water work for FY22

Table 5. Project 3B (FY21) Dry Dock Interface Wharf Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
14	steel	H	99	99	impact	vibratory	168	14	60	840	20	280

Caltrans 2012; up to 15 days of in-water work

Table 6. Project 3C (FY17/FY22) Refit Wharf #1 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	steel	round	6	0	impact	n/a	179**	6	70	420	25	150
30	steel	round	0	6	n/a	vibratory	n/a	6	n/a	n/a	5	30

**CALTRANS (2012); ²WSDOT(2005a); ³WSDOT(2005b); up to 2 days of in-water work

Table 7. Project 3D (FY17) Refit Wharf #2 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	steel	round	6	0	impact	n/a	179**	6	70	420	25	150
30	steel	round	0	6	n/a	vibratory	n/a	6	n/a	n/a	5	30

**CALTRANS (2012); ²WSDOT(2005a); ³WSDOT(2005b); up to 2 days of in-water work

Table 8. Project 3E (FY18) Refit Wharf #3 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	steel	round	6	0	impact	n/a	179**	6	70	420	25	175
30	steel	round	0	6	n/a	vibratory	n/a	6	n/a	n/a	5	30

**CALTRANS (2012); ²WSDOT(2005a); ³WSDOT(2005b); up to 2 days of in-water work

Table 9. Project 3F (FY21) Warping Wharf Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
30	steel	round	8	8	impact	vibratory	188 ⁺⁺	5	70	350	25	125

⁺⁺¹CALTRANS (2012); ²WSDOT(2005a); ⁴WSDOT(2010b); ⁵WSDOT(2005c); up to 4 days of in-water work

Table 10. Project 3G (FY22) Tug Pier Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
14	steel	H	77	77	impact	vibratory	168	10	60	600	20	200

CALTRANS 2012; up to 16 days of in-water work

Table 11. Project 4A (FY20) New Facility P617 Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	concrete	square	165	0	impact	n/a	165 ⁵	12	200	2400	55	550
18	concrete	square	50	0	impact	n/a	159 ^{1,2}	12	80	960	35	420
24	concrete	square	0	121	n/a	vibratory	n/a	22	n/a	n/a	5	110

U.S. Navy 2013, 2015; US Navy 2014; CALTRANS 2012; up to 80 days of in-water work

Table 12. Project 4B (FY20) Small Craft Berth Site VI Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	steel	round	30	30	impact	vibratory	179**	8	100	800	35	280

**CALTRANS (2012); WSDOT(2005a); WSDOT(2005b); up to 8 days of in-water work

Table 13. Project 5 (FY17) Magnetic Silencing Facility Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to drive one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
18	composite	round	18	0	vibratory	n/a	n/a	6	70	420	25	150
16	timber	round	0	18	n/a	vibratory	n/a	6	n/a	n/a	5	30

Up to 3 days of in-water work

Table 14. Project 6A (FY22) TPS Pier Demolition Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to remove one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	concrete	square	0	649	n/a	vibratory	n/a	16	n/a	n/a	5	80

Up to 41 days of in-water work

Table 15. Project 6B (FY22) North Trestle Demolition Supplemental Pile Driving Details

Pile Info			Total Number of Piles		Method		Single Strike dB SEL	Max Piles / Day	Strikes / Pile	# Strikes / Day	Time to remove one pile (minutes)	Total Driving Time / Day (minutes)
Size (in)	Material	Type	Installed	Removed	Installation	Removal						
24	concrete	square	0	121	n/a	vibratory	n/a	20	n/a	n/a	5	100

Up to 6 days of in-water work

* Inconsistencies in source levels given between US Navy (2014) and this analysis are due to the use of data given in the executive summary table of WSDOT 2005a and 2005b, rather than the text of the report by US Navy 2014. This analysis uses data from the reports’ text due to an ambiguous metric (“RMS (peak) dB”) in the executive summary table.